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Solid Waste Recycling

Michigan Solid Waste Policy

- Challenges decision making based on the three principles of sustainability: economic vitality, ecological integrity, and improved quality of life.
- Stakeholder driven development process. Released in May 2007.
- Views waste as a resource
- Next Steps: Solid Waste Advisory Committee convened to guide implementation of Solid Waste Policy.

Why Recycle?

- ✓ Creates Jobs
- ✓ Reduces Waste
- ✓ Good for Environment
- ✓ Saves Energy
- ✓ Preserves Landfill Space
- ✓ Prevents Global Warming
- ✓ Good For Economy
- ✓ Reduces Water Pollution
- ✓ Protects Wildlife
- ✓ Creates New Demand

What is waste utilization?

Using waste, site or source separated materials, or other approved material for beneficial purposes:

- reuse
- recycling
- composting
- energy recovery
- biogasification

So where does Michigan stand in respect to recycling?

- Michigan's recycling rate of 20 percent is lower than the other Great Lakes states (30 percent) and the U.S. (27 percent) averages.
- Over 25% of Michigan's recycling rate is related to the yard waste ban and the bottle deposit law
- Michigan's recycling program is funded at a fraction of the level of other Great Lakes state programs and ranks 41st out of 48 states that reported their allocations for recycling.
- Only 37 percent of Michigan residents have access to curbside recycling, the lowest percentage of all the states in the region.
- Unlike many states, Michigan does not collect or require reporting of MSW recycling data; therefore, Michigan does not have the ability to measure the state's recycling performance or its handling, collection, transport, and marketing of recyclable materials.

Volume of industrial by-products were recycled in Michigan in 2011

▪ Coal Ash	310,700 tons
▪ Foundry sand	133,900 tons
▪ Flue Gas Desulfurization sludge	35,000 tons
▪ Pulp and paper sludge	79,500 tons
▪ Cement Kiln Dust	25,800 tons
▪ Scrap wood	78,200 tons
▪ Shingles	34,500 tons
▪ Other wastes	94,600 tons
TOTAL	**792,400 tons**

Annual Benefits of Using Coal Combustion Products (EPA data from 2005):

- Saved 158 trillion BTUs of energy ….enough to provide electricity to over 4 million homes for a year.
- Saved 11.2 million tons of CO_2 and 10,500 tons of methane (greenhouse gases) from being emitted into our atmosphere year…..similar to taking 1.9 million cars off the road for a year.

Potential uses for foundry sands

- Hot mix asphalt (HMA)
- Concrete
- Bases and sub-bases
- Retaining walls
- Soil blends

National foundry sand reuse project

- American Foundry Society has set a goal of 50% recycling rate for foundry sand
- EPA has conducted a risk assessment and has determined that the use of green sands from aluminum, iron, and steel foundries poses minimal risk
- National steering workgroup has targeted Michigan as one of the states to investigate the use of foundry sands in the construction industry

Annual benefits of using foundry sand:

- 212 billion BTUs of energy saved per year - Enough to provide electricity to over 5,500 houses for a year.
- Over 20,000 tons of CO_2 emissions prevented -Equivalent to taking 3,382 cars off the road for a year.

Yard waste compost

- 120 registered sites
- 1.4 million cubic yards brought to sites
- 720,000 cubic yards removed
- 1.3 million yards on site at end of year
- 5 sites have over 50,000 cubic yards
- 30 sites have less that 1,000 cubic yards
- Accounts for 20% of Michigan's recycling rate

History of Shingle Recycling in Michigan

- 2005 – Barrett Paving approved to use factory rejects in hot mix asphalt (HMA)
- 2007 – Generic exemption allows use in HMA
- 2010 – Generic exemption amended to allow the burning of shingles. MDOT issues "permissive spec" to use shingles on bike path and a small park and ride.
- 2011 – 14 sites recycle 34,500 tons

Other Material That Can Be Used In Construction

- Cement kiln dust - for soil stabilization and pH adjustment
- Concrete grinding slurry - for pH adjustment
- Drywall - for soil additive and soil blends
- Tires - in Rubber Modified Asphalt
- Compost – storm water management and soil blends
- Glass – in sub-bases and Glassphalt
- Dredge material – for fill, sub-bases, soil blends

Generic exemptions issued by the DEQ

- Drywall (2003)
- Concrete grinding slurry (2003)
- Tires (Updated 2004)
- Water softening limes (Updated 2005)
- Shingles (Updated 2010)
- Scrap Wood (Updated 2010)

Recent changes at MDOT allowing for the use of industrial by-products

- Drywall (2003)
- Concrete grinding slurry (2003)
- Tires (Updated 2004)
- Water softening limes (Updated 2005)
- Shingles (Updated 2010)
- Scrap Wood (Updated 2010)

Interesting Facts????

- Approximately $5,000,000 worth of biosolids were land applied in Michigan in 2010
- 300,000 scrap tires were cleaned up last year in Michigan using scrap tire cleanup funds
- 23,166 pounds of pharmaceutical wastes were collected in 2010

Additional Information

- DEQ Web site at www.Michigan.Gov/DEQ click waste, then Solid Waste, then Exemption and Guidance
- ShingleRecycling.Org
- Dredge material locator - www.glc.org/rsm/
- Foundry sand information - www.afsinc.org/content/view/791/264/
- Recycled Materials Resource Center - www.recycledmaterials.org/
- Foundry Sand Facts for Civil Engineers (FHWA) -http://isddc.dot.gov/OLPFiles/FHWA/011435.pdf